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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KENDALL, CHUCK O

ART UNIT PAPER NUMBER

2192

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/611,450

Applicant(s)

TOUSIGNANT, PATRICK

Examiner

Chuck O. Kendall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **Detailed Action**

1. This office action is in response to application filed 06/27/03.
2. Claims 1 – 30 have been examined.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –  
(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1 – 8, 10 – 12, 14, 16, and 21 – 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Madsen et al. US 2003/0204374 A1 (hereinafter "Madsen").

Regarding claims 1 and 16, Madsen anticipates in a computer system including system memory, a method for providing information related to the termination of a process, the method comprising:

an act of loading a termination function into system memory, the termination function having termination instructions that, when executed, cause a calling process to terminate without providing information related to a termination event that caused the

calling process to terminate (4:0040, see including exit of functions in exception routine);

an act of redirecting the functionality of the termination function to a memory resident detour function such that when the termination function is called instructions of the detour function are executed, the detour function having an invalid instruction that, when executed, causes an exception that can provide termination information related to a termination event that would otherwise cause a calling process to terminate (4:0044, see routine 35, exited and branching (redirecting) to the subsequent instruction);

an act of a memory resident process detecting a termination event (4:0044, see "indicate exit from the function 29");

an act of the memory resident process calling the termination function (4:0044, see "calling function 28"); and

an act of executing the invalid instruction to provide termination information related to the detected termination event, in response to the termination function being called (4:0044, see "misalignment instruction 32" for invalid).

Regarding claim 2, the method as recited in claim 1, wherein the act of loading a termination function into system memory comprises an act loading an application process into system memory (6:0061, see Table 150 and memory of host processor).

Regarding claim 3, the method as recited in claim 1, wherein the act of loading a termination function into system memory comprises an act loading termination function

wherein the termination function is a terminate function, an abort function, an exit function, an\_exit function, a\_cexit function, a\_c\_exit function, an\_amsg\_exit function, or an ExitProcess function (Examiner interprets this to be the exit instrumentation module disclosed in 4:0046, *equivalent function*).

Regarding claim 4, the method as recited in claim 1, wherein the act of loading a termination function into system memory comprises an act loading a termination function in response to user input.

Regarding claim 5, the method as recited in claim 1, wherein the act of redirecting the functionality of the termination function to a memory resident detour function comprises an act of activating in memory redirection (see FIG. 15, 42 for branch instructions also, see all associated text).

Regarding claim 6, the method as recited in claim 1, wherein the act of redirecting the functionality of the termination function to a memory resident detour function comprises an act of redirecting the termination function to a detour function that can cause an exception having an increased likelihood of being propagated to an operating system code layer (2:0029, see exception also see branch back for redirect).

Regarding claim 7, the method as recited in claim 6, wherein the act of redirecting the termination function to a detour function that can cause an exception

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having an increased likelihood of being propagated to an operating system code layer comprises redirecting the termination function to a detour function that includes an instruction that attempts to write data to memory address zero ([0031], see designated address range, instruction replacement module 24 and substitute instructions designed to generate exceptions).

Regarding claim 8, the method as recited in claim 6, wherein the act of redirecting the termination function to a detour function that can cause an exception having an increased likelihood of being propagated to an operating system code layer comprises redirecting the termination function to a detour function including an instruction that causes an access violation (2:0029, see exception also see branch back for redirect).

Regarding claim 10, the method as recited in claim 1, wherein an act of executing the invalid instruction to provide termination information related to the detected termination comprises an act of generating an exception that has an increased chance of being propagated to an operating system code layer ([0031], see designated address range, instruction replacement module 24 and substitute instructions designed to generate exceptions).

Regarding claim 11, the method as recited in claim 1, wherein an act of executing the invalid instruction to provide termination information related to the

detected termination event comprises executing an instruction that attempts to write data to memory address zero ([0038], see store in cache).

Regarding claim 12, the method as recited in claim 1, wherein an act of executing the invalid instruction to provide termination information related to the detected termination event comprises an act of providing termination information wherein the termination is one or more of register values, a memory dump, and an event log ([0044], for event log, see vector table).

Regarding claim 14, the method as recited in claim 1, wherein an act of executing the invalid instruction to provide termination information comprises an act of invoking a debug process that gathers termination information ([0055-0057], see debug information and replacement module).

Regarding claim 21, the computer program product version of claim 1, see rationale above as previously discussed.

Regarding claim 22, the computer program product version of claim 3, see rationale above as previously discussed.

Regarding claim 23, the computer program product as recited in claim 21, wherein computer-executable instructions that, when executed, cause the computer system to redirect the functionality of the termination function to a memory resident detour function comprise computer-executable instructions that, when executed, cause the computer system to execute a detour call in the termination function, the detour call calling the detour function (2:0029, see exception also see branch back for redirect).

Regarding claim 24, the computer program product version of claim 7, see rationale above as previously discussed.

Regarding claim 25, the computer program product as recited in claim 21, wherein computer-executable instructions that, when executed, cause the computer system to redirect the functionality of the termination function to a memory resident detour function comprise computer-executable instructions that, when executed, cause the computer system to redirect the functionality of the termination function to a memory resident detour function including an instruction that causes an access violation.

Regarding claim 26, the computer program product version of claim 6, see rationale above as previously discussed.

Regarding claim 27, the computer program product version of claim 10, see rationale above as previously discussed.

Regarding claim 28, the computer program product version of claim 12, see rationale above as previously discussed.

Regarding claim 29, the computer program product version of claim 14, see rationale above as previously discussed.

Regarding claim 30, the computer program product as recited in claim 21, wherein the one or more computer-readable media comprise physical storage media (FIG.2, see cache).

***Claim Rejections - 35 USC § 103***



5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen et al. US 2003/0204374 A1 (hereinafter "Madsen") as applied in claim 1, in view of Wygodny et al. US 7,058,928 B2.

Regarding claim 9, Madsen discloses all the claimed limitations as applied in claim 1 above. Madsen doesn't expressly disclose wherein the act of a memory resident process detecting a termination event comprises an act of memory resident process detecting a C++ exception that was generated by the memory resident process, the C++ exception being an exception that cannot be appropriately handled by a debugger.

However, Wygodny in an analogous art and similar configuration discloses that:

"when a C++ exception occurs inside the a function and the exception handler at an outer function instructs the function generating the exception to exit, or when the setjmp( )/longjmp( ) functions are used in C/C++ programs.

To detect and trace such events, the microprocessor's stack pointer register (ESP) is checked whenever a trace point triggers to determine whether any functions have exited" (29:5 – 15).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to combine Madsen and Wygodny because, it would enable the system to be better traced and exited.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen et al. US 2003/0204374 A1 (hereinafter "Madsen") as applied in claim 1, in view of You et al. US 5,787,245.

Regarding claim 13, Madsen discloses all the claimed limitations as applied in claim 1 above. Madsen doesn't expressly disclose that the wherein an act of executing the invalid instruction to provide termination information comprises an act of an exception catcher catching an unhandled exception generated by the invalid instruction. However, You in an analogous art and similar configuration discloses catching software exceptions generated in a debugger environment (78:40 – 45). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to combine Madsen and You, because it would enable catching exceptions at the point where the exception is thrown (You, 78:45 – 50).

8. Claims 15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen et al. US 2003/0204374 A1 (hereinafter "Madsen") as applied in claim 16 in view of Nagel US 6,071,317.

Regarding claim 15, Madsen discloses all the claimed limitations as applied in claim 1 above. Madsen doesn't expressly disclose, further comprising an act of activating in memory redirection in a system registry. However, Nagel does disclose in an analogous art and similar configuration making memory references to the system registry in a Windows operation system (14:40 – 45). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to combine Madsen and Nagel because it would enable performing redirection in a Windows environment.

Regarding claim 19, Madsen discloses all the claimed limitations as applied in claim 16 above. Nagel doesn't expressly disclose wherein the step for configuring a termination function to execute an exception instruction that provides termination information comprises a corresponding act of redirecting a library such that a termination event causes the exception instruction to be executed. However, Nagel does disclose in an analogous art being able to change a reference to particular field, program module, function, directory path or the like, such as a DLL (14:11 – 20). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to combine Madsen and Nagel because, it would enable performing independent updating of the DLL files.

Regarding claim 20, the method as recited in claim 19, wherein the corresponding act of redirecting a library such that a termination event causes the

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invalid instruction to be executed comprises an act of redirecting a dynamic link library (Nagel, 14:17 – 20).

***Allowable Subject Matter***

9. Claim 17 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

“ wherein the step for configuring a termination function to execute an invalid instruction that provides termination information comprises a corresponding act of altering source code such that a termination event causes the invalid instruction to be executed” and

“ wherein the step for configuring a termination function to execute an invalid instruction that provides termination information comprises a corresponding act of altering binary code such that a termination event causes the invalid instruction to be executed”.

**Correspondence information**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Kendall whose telephone number is 571-272-3698. The examiner can normally be reached on 10:00 am - 6:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ck.

Chuck Kendall 8/6/06